J. Worrall 'Scientific Realism & Scientific Progress' ~~Philosophy~~ Phil. Q. 32 (1982) 201-231

3 arguments against realism

1.) Idealization

2.) Underdetermination — but 'applicability' may be used to distinguish rival theories with non-empirical consequences.

3.) Scientific Revolutions

→ given reason versions

→ Conjectural realism — fallibilist but to point we can do.

What about Correspondence argument old theories were actually more right in some respects — respected at higher level by newer

L. Laudan 'A Refutation of Convergent Realism'
Phil. Sci 48 (1981) 19–49.

A very clearly argued sustained attack on 'ontological' or referential continuity between successive theories.

Does not if theories have different ontologies as ~~they~~ can be said to be a limiting case of the other. Attack on Put's Correspondence Principle. But what about 'translations' or 'reformulations' of the old theory.

F. Suppe ed. 'The Structure of Scientific Theories' is very good report of 1969 Conference — new ed. has afterword by Suppe — defence of received view (Hempel - Carnap) also of Weltanschauung approach of Kuhn, Lakatos — Critical Realism has the field according to Suppe. Good discussions on Kuhn's 'Structure of Scientific Revolutions' etc.

T. Kuhn 'The Essential Tension' — very nice collection of history, some historical, some philosophical — includes 2nd Thoughts on Paradigms, Recovery of Continuity of Science, Role of Measurement (to quantitative Kuhn losses), A role for Thought Experiments etc — nothing really new — most of his new ideas are summarized in Postscript to Structure of Scientific Revolutions.

Radnitsky & Anderson, eds 'Progress and Rationality in Science' – very nice sequel to Cohen's ed of Growth of Knowledge. LSE Popper notes for Kraków Conference with replies by Feyerabend, Lakatos, Musgrave, Albert, Jarvie, Anderson etc – these replies to critics esp Watkins (dealing especially with Musgrave and Feyerabend). J. Worrall.

P. Feyerabend 'Science as a Free Society' sequel to Against Method – 3rd part replies to critical readers under the title 'Conversations with Scientists' – nothing really new

Feyerabend — Minnesota Studies 1962, Beyond the Edge of Certainty 1965
J. Phil. (1965)
Shapere: (1966) Rev. Cosmos

D. Achinstein 'On the Meaning of Scientific Terms'
J. Philosophy. 61 (1964) pp. 497 – 509.
argues against F. on incommensurability
(similar to his 2nd Concept of Science)

Reply Ref :—
P. Feyerabend 'On the "Meaning" of scientific terms'. J. Philosophy 62 (1965) pp. 266-274.
tries to draw a distinction between meaning (Inhalt) & meaning reference as follows
terms: T = CM $\bar{T}$ = CM (after G) T' = R.M.

T & $\bar{T}$ are different theories, but no change of meaning — quantum value of force has changed, but no change in kinds of entities

& Meaning (Inhalt) if new theory changes extension of classes, but leaves concept unchanged
Meaning change is when new theory entails extension of all concept of old theory as zero & we cannot interpret new T as redistribution within same existing classes, but changes the system of classes itself.

Bacon Novum Organum

Book I centers about on 4 classes of Idols.
Tribe, Cave, Market Place, Theatre.

Book II expands the complexity of Tables and Arrangements of Instances. The example of investigating the form of heat is discussed at length.
He stresses in addition to the Table of Essence and Presence, the importance of the Table of Deviation. Negative instances would be endless and should be chosen as most alien in all other respects.
Finally there is the Table of Degrees which shows concomitant variation.
Decisive information is obtained from ~~Into~~ Instances of the Fingerpost. (Instances Crucis)

M Ill A System of Logic

In BK I M. distinguishes denotation, connotation

- Bk II M. critices analysis of the syllogism
  He agrees with argument of Cty i.e. Socrates is mortal is presupposed in All men are mortal, but argues that true premises e.g. John and Harry are mortal → universal statement
  deduction
  Socrates is mortal.
  So inference is always from particulars to particular.
  But we can say All men are mortal as to be understood in connotation, not denotation.

In Bk III M. deals w canons of inductive reasoning.
  He does not claim powers w/ were in bacon is defect (cf Bacon) but admits powers of intuition in framing hypotheses
  Canons can be looked at in 2 ways
  (1) mode of discovery of law
  (2) mode of proving hypotheses
  i.e. role in both heuristic & evaluation

M. Polanyi: Personal Knowledge

this seems to be a precursor of Kuhn
– Gestalt switches are emphasized
freedom is assumed. We conjecture the
truth that relate and are committed
to our beliefs (a post-critical position)
but yet know our views are fallible.
Final chapter deals with emergent nature
of consciousness "we may converge then
a coarse field ahead called faith all there
centres [of consciousness] by offering stream of
short-lived, limited, hazardous affinity for
making sense beyond & then can towards
an unthinkable conjunction. And these are,
I believe, how a Christian is placed when
worshipping God"

Page VII [Personal knowledge] "is indeed defined
in the sense of establishing contact with a
hidden reality, a contact that is defined
as the condition for anticipating an indeterminate

range of our concern (and further our incalculable) true implications — personal knowledge is an intellectual commitment, and as such inherently hazardous. Only affirmations that could be false can be said to convey objective knowledge of this kind".

P. K. Feyerabend. Against Method

as a letter to labs attacking rationalist methodologies. F. discusses fallible arguments for Galileanism in detail and draws a number of conclusions. (1) Contest & discovery are a pathologies in scientific language.

(2) No independent observation language.

New theories create their own observations

(3) Incommensurability of successive theories —

F. does not believe in precise logical analysis here — denounces anthropology of a "new language" and has discovered — this claim is obscure to classical art. failure in fresh art

F. says science should not be taught as dogmatic truth — as a fact and magic etc. Labs are anarchistic — we can always cling to a degenerating programme.

F. has good summary of Popper's ideas

F. stresses Kuhn lines as Popper's ideal of content-increasing succession of

if theories are an alternative
He refers critical to Goodman on translation
believes theory R JPS. 1970 p.259, 1971, p 39
also Davidson on radical translation
which F. describes as a "triviality".
Both are very witty and provoking and
its detailed arguments are different
to counter, (cf Hanson scepticism)

J. W. N. Watkins: 'Non-Inductive Corroboration' p. 61

in the problem of inductive logic ed. Lakatos

Make point corroboration would be undesirable if it encouraged a prediction that contained false premises. But the approach of corroboration notes we need claim -

If $c(h_2|e) > c(h_1|e) > 0$

h_2 may be very bold (stronger than h_1) and hence very vulnerable to powerful tests

— it is not falsifiable when h_1

Non corroboration is an approach of how far we have advanced the cause of science

— in answer at explanations with very high content and high pre-ed but a lot of phenomena that explains etc etc theory.

When expo. should we bet always on the most probable hypothesis — depends on utility of outcomes — if pay bet to bet according to a hypothesis you believe to be false.

Cell Navigator if a ship in foggy weather may assume it is nearer coastline than he really has reason to believe, and act accordingly.

In the article 'Hare, Carnap & Popper' p.271.
Watkins says Popper is confused & the Hare
in the sense that all informal statements are
equally uncertain, but not in the sense that
all are equally unacceptable.
Popper gives rules for preferring one hypothesis
relative to another, not relative to all the
infinite possibility of alternatives to it.
Corroboration relates to verisimilitude
but gives no guarantee of increased
verisimilitude.
We accept one out of a number of contrary
competing hypotheses on the one most
worth supposing (or rather dig
(in effect most likely to be informative
in view of the high content requirement)
A good theory is one labelled likely to fail
This is the paradoxical nature of PCS
plausibility.
Corroboration is an
assessment of informativeness not of
a practical guide to future actions
Hare — Indicative rules disarms — Imperative rules disarms
Carnap — yes — no
Popper — no — no.

A. F. Chalmers:

What is this thing called Science?
An assessment of the relative status of science and its methods:
University of Queensland Press, 1976

Good general introduction to Popper, Lakatos, Kuhn & Feyerabend.

ch 1. Induction common sense inductivism

Observation → Laws/Theories → Deduction → Predictions, explanations

facts
pure observation

Ref: Owen Hundle. Perceptions: Facts and Theories OUP 1971

ch 2 The Problem of Induction — Can it be justified?
Large number of instances and wide variety of conditions
enumeration elimination

— Probabilistic Confirmation Theory

Ch 3 Theory dependence of observation.

Induction is supposed to start with a secure base of observation and build up laws & theories by inductive reasoning.

But what one sees depends on what we expect to see. Eg of optical illusions

eg Polanyi Personal Knowledge p.101 "X-ray picture is recognizable as an artificial or galaxy's view than likely had to be 'interpreted' – cf figure-ground & count as a photograph."

Also all observation requires some conceptual theory. Eg "Look out, the wind is blowing the baby's pram over the cliff-edge." – wind exerts power, pram will fall, falling will hurt baby etc. or "The sun isn't light" – that is sun relative which can be relied to means of expression.

The observation statements are fallible

eg "Here is a piece of chalk"

Q It doesn't look like chalk

A Looks white like a piece of chalk

Q. What about chemical analysis – test for $CaCO_3$ for other and looks for CO_2 – but all this is allowable to chemical theory or laws

Ch 4 Falsification is introduced.

falsifiability is a criterion for scientific status of theories

— unfamiliarity, precision

Popper's account is

problem situation → theory with novel consequences

→ system testing → theory upheld

if falsified → new problem situation → new theory.

One consequence is theories tend to clearly

a priori stated

N.B. Starting point of a problem situation

is not observation. Problems are posed

only in the light of some theory

Ex Only the bats fly at night, although eyes are good, ears

— Many eyes are covered in vision

(2) why is bit of lacunator lower up a mountain.

— clearly what theory that

free of a vacuum, lets up the mercury

(3) why were Boyle's photographs blurred

— it was caused by radiation

could protect cameras etc

the plates

4) Why does perihelion of Mercury advance.
— elliptic orbit, Newton's theory of planetary motion

Em 10 laws of force.

1) Kepler etc. → Newton → Einstein

Kepler: explanation of why fall to the ground (seek their natural place). But earth not explain why moon of Jupiter go round Jupiter, not round the earth + stars pass left to right fall at just at past of earth is moving

Newton: Theory of Tides, variation of force of gravity with height etc. Total probelms (cut-out account for motion of moving non rotation — elliptic orbit relativ etc)

Einstein: non rotation and relativity and non 2 body or 2c connected. + bending of light by gravit field. total predictions.

Practical E1

Novogdeev & Zots

Theory 1. Bots love fast vivian with eyes – ∴ love as they fly at night. This is problem.

Theory 2. Bots 'bees' like fast eyesight. Test by blindfolding Zots.

Theory 3. Bots ears are twitched. Try plugging ears of Zots.

Theory 4. Bots because they – squeals are ultrasonic – Try gagging the Zots.

Then bots food let they still go wrong – objects near the ears are twitched. If Zots wind in cell were not truly representative.

N.B. Set of observation statements that are false are a class are set of 'relevant' ~~false~~ PF ~~set of O.S. that do falsify~~ ~~a class are of false F content. Set of P.F~~ ~~that do not falsify~~ Theory are of truth content T

~~P.F. = F + T, Verisimilitude = T – F~~

ch 5 Sophisticated Falsificationism

– Popper on growth of science. Popper closed book on nice content (in nice falsifiable) than the one it replaces. → dynamic picture of science
cf Popper 'C & R. ch. 10 and O.K. ch. 5 & 7.
In general what makes a theory acceptable in place of another – (Popperian answer here is likelihood refuting a theory and rejecting it)

But we cannot measure degree of falsifiability absolute – depends on theories that we may be able to compare & probabilities relative sort.

We rule out ad hoc hypotheses – by novel content
– no independently testable
eg Bread riots – but Fourel indeed cultural of crypt periodicity, all fall dead
Ad hoc modifications is
Bread riots, except that produced an occasion coming in flower,
– then is less testable than original theory.

Briefes Ed

Galileo observed and telescope was not a most effective. Herschel's sister did the work for an amateur astronomer picking up the undertakers — in way of testing this — introduced to replace they that known Cadiz, two North spheres. I repeat points the 'stuff' is put on tab of Neptune only in making Arcturus stay as one.

Eg: Non-old fore notifications:

1.) Fixed numbers → all fixed numbers values made from which experimental by forces (eight) — we can test this they by analysing forces for known forces, testing the label from the village for pieces of the forces — arbitrary forces an special number of heads, testing for presence. effect are

2) Recovery of Neptune from calculations of planet Uranus — predicted by Leverrier & Adams — rational prediction & position of planet confirmed by Galle.
(but cf. Mercury and planet Vulcan)

* Good review following on role of confirmation in sophisticated falsificationism — cf Chalmers 'On learning from Nature' BJPS 24 (1973) 164.

Falsifiable beds to possibility of novel confirmation.

Bacq observes or more confirmed to either

a) Confirming a bold conjecture

b) falsifying a cautious conjecture

Those two go together when we consider a the bold theory in relation to background knowledge

Bold conjecture is one that contradicts much accepted background knowledge.

Bohm is an historical relative term after a few confirmations if a theory it may be applied under background knowledge to suggest that is no longer bold.

in problem of novel cases can bold in late 19th century — now it is no longer bold

A ~~bold~~ for bold theory is one which has novel predictions

(c) Jeans's prediction of bright spot at centre of cluster of a C dwarf (1913) was based relative to corpuscular theory of radiation propagation of light.

Independent account of role of corpuscular theories why were rejected if experiment is not highly regarded — there is yet clear or formal logical model/theory corpuscular theory. Has modern discussion as well as theory of pair creation as well as Newton's original effort. (Jeans is not quite accurate in say Bogoman Ivan Jeans that p(T) is high rate at which corpuscular process does flow down.)

(d) Levels of Simplification

problem of experimental basis — observations problems simplification are stimulates failure.

— Basic principles are accepted as crucial in decision — a are uncertain, but conventional is tentative — theories concluded in observation must also be given to lecture.

— sense of the exam. and the fields

C. continue with a discussion of the experiment to test gravitation — we saw that it always led a confusion of theories

Ex: 1) Irregular motion of Uranus did not refute Newton's theory — just sir of planets was wrong.

2) Brahe' discovered to refute Copernicus because no parallax of distant stars. What was wrong was estimate of great distance of the stars so problem disappeared but too small to measure.

3) Lorentz example. Trying to refute Newton. Planets irregular motion. new planet proposed. too small to be seen — Bigger telescope is built. — not seen — finally comic orbit. — years of notebooks to test — not observed — magnetic field is perturbing the satellites orbits — very sensitive test to measure magnetic field — not observed elipse Lorentz E, q and K p ice.

C. continues by stating that if phlogiston had been accepted (at any rate, roughly) then not theories would have been elaborated at length

Sc 1) Newton's theory followed by observation of the moon's orbit

2) Faraday's atomic theory followed by stability of atoms — electron shell structure, calculation of the orbit.

3.) T.T. followed by observation of Mercury's perihelion — not cleared up until Q.T. emerged.

4.) Newton followed by Mercury anomaly — not abandoned until replaced by E's theory.

C. continues with a nice account of the Copernican hypothesis (1543)

Aristotelian physics universe as a system sub-lunar and super-lunar.

pl. linear, decay, generation, corruption & change; earth, air, water, fire

and with natural place with fields for rocks

water is at surface air does surface.

Inter-lens - action - carried out by epicycles required by Ptolemy.
Motions other than natural motions required a cause.

Argument against Copernicus: Relativity

1.) Tower argument. If earth spins that drilled from top of tower should never arrive at tower (stone moves always towards the centre.)

2.) Lose objects should fly off earth

3.) Why does not earth leave the moon behind at moons

Instrument

1.) Measure of parallax of stars

2.) Pendulum does not change use as required by Copernicus

Attractions of Copernicus

Simple explanation of

1) ~~Expansion of planets~~ Retrograde motion of planets

2.) Of Venus, Mars when they pass from — Sun orbits

Full Copernicus had 4 orbits in to lead to loop and be epicycles
Instead used a Ptolemy

Galileo's contributions

1.) Telescope observations

a.) moon's craters — no definite colour, small, heard bodies

b.) moons of Jupiter — fellow Jupiters (included in astronomical circuit)

c.) phases of Venus

d.) different size of moon, Venus as received this literally very as foreshadowed by Copernicus.

but Galileo had no theory of telescope & finding his interpretations unfailing of mountains etc. Some of 99 craters or moon were due to elevation.

2.) Relevant News

1.) Aristotle law of unlike affairs taken against — that any thing step out stars drifted from north (pt 2 Dec Sciences 1638)

could not deal with contrast effects but also failed to explain 4th we

do not feel water & do each

But fishes still had. preferred
pl circular tracks.

Toffler simplified and loc. observations
by using elliptical orbits

Newton Very fascinating lecture
unrelated — detailed investigation
now possible of tidal theory,
tracks written, departure from
Kepler's laws due to finite mass
of sun, interfering forces etc

So Copernicus by hunted in
the end — but not proved his
observations (Solar Acent was)
and unrelated fabricated (Fabricated
Acent was) → Lecture idea
of a Astrical Kryptocosm.

Ch7 Theories as Structures:

1. Research Programmes.

Negative heuristic directs modus tollens away from hard core which is retained by dogmatic Popper or Lakatos falsifications.

Positive heuristic is directed for articulating protective belt of auxiliary hypotheses, initial conditions and variable descriptions statements (e.g. position of stars in Copernican programme)

Ex. Copernicus: H.C. earth, planets orbit sun and earth spins on its axis.

P.B. epicycles, observation of tables, no parallax etc

P.H. may involve purely theoretical papers

Ex Newton: Theory of gravitation
Take account of moon's pull on earth
sphere, wobble of earth
pull on tides planets and so on.

Li programme has an internal dynamic.
↳ critiques and alternatives

Let Newton to consider non-spherical planets
the oceans for great motion of moon etc

Pro. experimental frequency shifts should be accurate tests
– should be accurate tests
Need theory for understanding tests
Sensitive tests of spec. co-ordinates (Coordinates)

Quotes in Bohr's Notes theory. Note
late stage of classical discussion plays a
role. Frequency develops without trend of
or in spite of theoretical falsifications'
personal frequency frequencies via correct
predictions (theoretically approximate) if they
are confused.) Note usefulness of confusion
in QT account – falsifications very just to
ignored.

S.R.P. want 1) give relevant correct physics
2.) correct classical physics of period.
physical.

EHS
Paradoxes solution 2 but not 1.
Restricted solution 1 and but not 2
; Freedom in
Compare 1.) with correction of frequency
to of frequency
2.) Compare behavior 2 frequencies.

So as non-ad hoc important in 1 correction
in Probability distribution, or new theory of description of identity of
or new theory of refraction in earlier & atmosphere
to account for motion of Uranus.

2 sets of [illegible] rules out by L

1) old [illegible] modification — forbidden in linear case as 'natural' models.

2.) changing local case — force been put [illegible] in not [illegible] approx.

But confusion of S.R.P's in fundamental — the S.R.P may pick up defects

a period of 3 topologies

Thus by [illegible] predictions

e.g. 70 years to confirm flux of 2 epochs predicted by Cosmologies

[illegible] years to detect [illegible] (round 1970)

We prev. observing [illegible] [illegible] also [illegible] Thus [illegible] by Friedman Received Hold

Reason that [illegible] would need discovery of [illegible] — [illegible] [illegible] of [illegible] of [illegible] the 2 frequencies — so [illegible] SR2's by 20 or [illegible] on L. [illegible].

L's rationalism does not fit clean cut
adverse also to Popper or Feyerabend,
but does fall a recent trend out of
thing is to be aimed at (realistically)
e.g. it is not relative to aim at a
final and unfalsifiable theory.

ch 8 Theories or Structures
2. Kuhn's paradigms.
The Structure of Scientific Revolutions, 1962.
— Historical approach. or in Calculus
but influences sociological factors.
and incompatibility of rival theories

pre-science → ~~paradigm~~ normal science → crises
→ revolution → new ~~paradigm~~ normal science

→ new crises

paradigm denotes people-holding entity
Natural science is governed by a single paradigm
Reason distinguishing features of science from non-science
according to Kuhn (cf Popper)

puzzles under a paradigm of theoretical (new math, techniques etc)
and experimental (new instruments etc)

Failure to solve a puzzle is seen as a failure of the scientist not of the paradigm — we talk of anomalies, not of refutations

All paradigms possess anomalies
Kuhn called them falsification.
A normal scientist is uncritical (of the paradigm)
In pre-science there is disorder as paradigms vie after scientists
may differ about standards governing legitimate problems, concepts and
of course methods.
He cannot define a paradigm directly
It is defined in use — tacit knowledge
and craft skills are involved that cannot be spoken — as Wittgenstein.
Crises develop the anomalies are
pressing as facts for Aristotle's Physics
Spheres.

Social impact of activities may be important
e.g. Calendar reform at time of Reformation.
length of time activities have been carried on
Number of activities

— all can give to practice some
Problems raised questions problematic of the
paradigm — problematic of science focus
may particular. Rules of the paradigm are
lessened — world standards begin
New paradigm emerges in a flood
— fashion switch
Incommensurable days in order, ones
1.) activities different.
Ex Marbles 2 sets of rules in marbles
→ all forms of behaviour are same
Re-learning classify for philosopher
— classifiers will learn
Remind the activities
↳ Further in detail,
2) Different sorts of questions are geometrical
or legitimate for Bruhde why do stones
fall is not a useful question for
Newton it is a vital question.

what is real of ~~light~~ carry will to action
no longer legitimate for Einstein
and so on.

Transmutation of elements not emerged by
Fermi — is in modern Nuclear
Physics (as indeed in Medieval alchemy)

Change of allegiance of individual
scientists is made for a variety of
psychological reasons. — subject of
new theory — rel. influence of some
professor around, — social impact
etc.

But revolution + total major effect
is a sociological change in the
scientific community.

Does Science progress thru' a revolution?

or do new paradigms just out dispute
questions — Relativist position — of
Feyerabend. Kuhn says he is not
a relativist. Progress consists in
increased puzzle-solving capability
— But K. denies any of rises in truth.

Also is nonsense cofactual for
following puzzles (Mendel, mathematical
etc)
My problem in Newton's mechanics
can be solved in rel. mechanics
— due to a <u>sort</u> of limits con-
of the other.
(what about Robin losses?)

<u>N.B</u> Robin is not merely <u>descriptive</u>
He says minds, mechanics, functions
are both meaning fields & propositional
meaning in his sense of propositional
<u>minimal meaning</u> Science solves puzzles,
because they do not fit all other
true questions the Newtonian
<u>Revolutionary Science</u> creates a prior
<u>Conceptual</u> puzzle — solving paradigm
to emerge when the fact issues out
of steam.
— Contrast with Moulines account of
frozen thin 'centrepieces' fundamental science

Final point is Kuhn's use of phrase 'paradigm' to characterize the lack of coordinated diversity within a paradigm — community of scientists hedges its bets on the issue.

References in Kuhn

Kuhn) 'Comment on the relation between science and art.' Comparative Studies in Soc. and Hist. 11 (1969) p. 403–12.

Bloor defines Kuhn v. Laudan in 'Two paradigms of scientific knowledge?' Science Studies 1 (1971) p. 101.

Kuhn 'Second Thoughts on Paradigms' in Structure of Scientific Theories (1973) ed. F. Suppe, p. 459.

Ch. 9 Science. A process without a subject 15

Recognizes 3 approaches to natural scientific knowledge

1.) Objectivist — fabric philosophy based on finite, rare experiments — industrialist

2.) Conventionalist — probably more — collective beliefs

3.) Objectivist science independent of over relativist → leads 3 of important problems, theories etc.

Kuhn argues 3 approaches to scientific knowledge 24
are wrong:

1.) Hypothesis of individual scientists
2.) Sociological concerns of groups of scientists
3.) Objective evidence of paradigms

But to go for 2. as lack of clear cut
science?
Challenges again for 3.

N.B. Objective does not mean true
Objective theories may be false
But as ~~Objects for~~ objects for study
and investigation they exist independently
of individuals & groups of individuals
like do the investigating
C says we should first investigate
objective nature of scientific product.
— then we can investigate behaviour
of individuals or groups of scientists
who are the producers.

Refer to Popper 3

Popper as a Social Activist: Ravetz: Scientific Knowledge & its Social Problems 1971
Toulmin: Human Understanding 1968
L. Shaw: Organized Knowledge 1973.

ch 10 Truth, Realism and Representation

Do our theories converge towards the truth?
Kuhn says there is "no coherent description of ontological development" (SSR. p. 206.)
Contrast Realism: Popper discrete but cumulative
and Representation: Popper general principles
– just sets of rules for doing
other

Difficulties with representation
1.) relies on dichotomy between observation and theory. Is this valid
2.) Cannot explain novel prediction
eg. of robots and features that don't
later developed of theories of Einstein
Bohr and Heisenberg etc.

cf. Cicero in preface to Copernicus
The Revolution of the Heavenly Spheres
attacks on unfamiliar classification
cf. Galileo
cf. falling on a velocity "out of nowhere".
But realism is new production because
of these conceptual theory revisions

this movement of mind leads to all sorts of
fundamental puzzles that have to be solved.
If movement of mind can 'as if' work out
problem solutions as fast as computer puzzles
unless not aware – program of science should
be followed.

Truth: <u>Generates problems</u> that lead us
more by corresponding to facts – all
Tarski's theory understanding by problems.
Popper refers to content not of a theory
in terms of observations falsified that
can be deduced from it. In Popper's
view not a robust enough regard to
theoretical terms (?)
A true theory is one ~~that~~ for which all
deductive consequences that follow from it
are true. – Thus we still have an
IA of subsequent – also observations
involve theoretical terms.
Thus we are led to Popper's notion
of <u>verisimilitude</u> = (Truth content) verisimilitude
– measure (Falsity content)

Truth content = class of true observational consequences of theory

Falsity content = class of false observational consequences of theory.

t_2 is better than t_1 if either

a) $T.C.(t_2) \supset T.C.(t_1)$

But $F.C.(t_2) \not\supset F.C.(t_1)$

or b) $F.C.(t_1) \supset F.C.(t_2)$

but $T.C.(t_2) \not\supset T.C.(t_1)$

But compare esp. p. 233 where Popper says there are two notions of verisimilitude according to whether logical content or empirical content

Popper takes Tarski's problem, plus other stuff.

Popper says

As Pearce proposes the verisimilitude of its theories should increase.

But this cannot be made formal cf. Tichy – Miller difficulties etc.

Epistemological problem

How do we know verisimilitude is increasing. ?

Difficulties no. 1) observational statements are fallible
support false statements may later be taken as true (cf. stellar parallaxes ex)

2.) Later on a lot of false accounts may arise in our account of verisimilitude is necessarily tentative.

3.) Some true conjectures should be given higher 'weight' in assessing verisimilitude, this Popper proclaims (Most of Sudoku know this ?)

Assessment of evidence relating to degree of verisimilitude is explicated by Popper in his notion of degree of corroboration – the degree it has to withstand a variety of severe tests.

claimed consists Experiments looked to have been no correlation than Pitzing — first in the end it was zero fruitful so this costs doubt is clear that one of James's to increase zero-nullitude by the ocean in achieving that aim being measured by degrees of correlation.

Also correlation is time-dependent, but so fertility is zero-nullitude — a thing changes reduced as it develops — cp. development i.e. m. they could predict development of the author.

Children says our science for scholars is to devise an instrument capable of leading to discovery of novel facts rather than a prefixed doxomatic of what the world is really like

3a

ch 11 Colletti develops his view

3c

views called Radical instrumentalism or pragmatic realism

Popper says knowledge always is bracketed or bounded – posits a boundary between observables and theoretical realm.

Chalmers notes different responses – positivists from theoretical interpretations from theoretical interpretations (but radical instrumentalism) – realists dispute reality

describes what world is really like

Theories are real. and so are the world.

– They are linked by a workable practice (or third realm) – The world behaves as if the theories were real

ch 12 does with 1) Materialism

(Louis Althusser's Marxism)

Scientific practice is linked with other forms of social practice, the whole guided by Marxist elements (Essence).

– going to Politics 3 worlds (p 130)

world 1 – Human lives

world 2 – psychological processes

world 3 – theories, problem situations etc

General obs to plato

The Franco and Nicholls letters concerned 3.31
on p. 141 Chalmers discusses Lobolev's notion
of a rational reconstruction of an episode
in history of science — then contrast actual
history ~~with~~ in order to entrench one's recommendation
for level of history and the actual history
for lack of rationality
on p. 143 Chalmers claims Feyer's
Lobolev on quasi-inductive procedures
to justify their methodologies as actually
their stated aims
2.) Feyerabend's epistemological anarchy
is almost exactly opposite of deterministic
success of program of science
offered by Marxists.
F. compares scientific ideology or religion
SA is taught dogmatically — quite unsophisticated
F. says is no fixed scientific method
— anything goes. He argues from detailed
study of history that no single identifiable
method has in fact been used.

F. admires Galileo, but says it lies in methodological bits — hence according to the best methodology (Galileo) there is no methodology!

F. gives detailed study of Galileo. G. devotes his theories despite of the empirical evidence rather than because of it — defended his theory with propaganda bits. Thus G. accepts Galileo's version as against rival version because it supports his theory — appealed for circular verification and relativity principle

F. proposes a proliferation of theories (Karl Kuhn) — forces in explanation rival theories, not between theory and observation.

Ipso data for testing are theory-dependent and of another e.g. Brownian motion contradicts ~~F.T.~~ ~~of forces at a distance~~ 2nd law of Newton only in the light of F.T. (In the against rival — cf. Feynman lectures?).

F. argues for 3 sorts of pluralism

1.) methodological — different fields
2.) theoretical — many competing theories
3.) Epistemological — science has its special standards but competes with magic, religion, astrology etc. all equally a priori demands on our attention.

↳ This is what F. means by epistemological anarchy or Dadaism

F. answers science by delight at goals & its productiveness (hedonistic mean of science) — rejects all optional features of science.

Clashes concerning

For F. science is a given without a cat
For Feyerabend . . . cat without a given
given

Reference on Equaland

Against Rooted.

How to defend ~~Science~~ Society against ~~Society~~ Science, Federal Malleable II (1975) 13.

'On the Influence of the Sciences and the Arts, and the Possible Identity of the Two'. Barton Studies Vol. 3 (1985)

T. S. Kuhn The Structure of Scientific Revolutions 2

p 10 paradigm has 2 characteristics
1) Enough group of adherents attracted away from competing modes of scientific activity.
2) Open-ended with many unanswered questions
— not a fully defined theory or fully specified programme.

p 25 well as normal science comprises
1.) Measurement (not accurate) of quantities suggested as important by the paradigm.
2.) facts to be compared with predictions of the paradigm
3) articulation of the paradigm
p 33 K. refers to clarification of a theory by refinements

p 36 Discussion of puzzles:
puzzles serve as tests of skill or solution.
A question which cannot be answered is not a puzzle.
Rho p 38. there must be rules that delimit what explanations are acceptable solutions
eg Jig-saw puzzle — we must not force the pieces together

p. 45 K. says paradigm is a collection of beliefs which have a family resemblance (cf Wittgenstein) – no explicit set of criteria

p. 55 K. discovery that is a discovery involves recognizing both that something is and what it is.

e.g. planet crannies are reflected in many occasions before Herschel identified it as a planet.

p. 77 K. stresses that a paradigm is only abandoned if a new one is ready to replace it – (contrast Popper's refutation & rejection)

We compare both paradigms with nature and with each other

p. 81 K. stresses there are always point anomalies (moon's orbit after Newton, Mercury's perihelion etc)

but some anomalies are more pressing

e.g. apparent exceptions to the paradigm are called crises; a length of time taken in attempts to digest the anomaly

p. 96 K. shows that failure of normal science is due to the selection of problems by the paradigm, not by 'practical' considerations. An excessive concern with useful problems can greatly inhibit scientific development.

p. 101 K. introduces incommensurability. Space, time, mass in Einstein are not the same concepts as in Newton's theory — so Newton is not a limiting case of Einstein, says K.

p. 110 K. says paradigm defines what counts as a legitimate problem, science ought to solve. e.g. Hence the 'explanatory' priority of just accept 'action at a distance' as in Newton. Newton's paradigm leads us to ignore a mechanism agent 'mechanical affections' in the style of Descartes to account explanations (substantial forms) as used by the Scholastics

p-109 K. discussing Galileo's Dutch geese example of Aristotle's view of Kepler's view of conservation of conserved qtt as compared with Galileo's view of a nearly periodic motion being slowed by frictional accidents

p. 126 Duck-rabbit shows 2 men with same apparatus can see different things

Reversing lenses example shows how 2 men with different retinal images can see the same thing

p. 148 K. says anomalies relative paradigms cannot be solved just by examining problems solved since each paradigm defines what it will recognize as a problem.

p. 152 K. states change in paradigms can take a whole generation to effect.

p. 154 K. lists some reasons for sticking paradigms - novel predictions are submitted to be unpalatable on Popper's hypothesis of falsifiability as an criterion of non-theory.

But K says (p. 155) there lots of research are not compelling either individually or collectively

because (p. 157) rather than every - some problems are better solved by the old paradigm change in paradigm not retrospective about problem-solving achievement but about future promise in respect of problems neither paradigm has got solved. Decision is based on faith in new paradigm (cf religious conversion)

We do not have (p. 158) a group conversion but an "increasing shift in the distribution of professional allegiances"

In last chapter K. discusses sense in which science can be said to progress

In normal science this is due to solution of problems (see above)

K says in philosophy if we say there is no progress what we mean is there are still competing schools, not that each school

does not progress in its own terms.
Progress across revolutions is more problematic since old questions that were answered may now be ruled out of court as to what.
But K. says (p.169) new paradigm must at least do 2 things
1.) solve an outstanding problem
2.) preserve a "relatively large part of the concrete problem-solving ability of its predecessors".
p.170 K. says we do not progress towards the truth — no final 'goal' toty relative to theory of evolution — does less no 'goal'. (although)
K. concludes by saying we must distinguish 2 senses in which progress is possible
1.) scientific community must be special (as described in H's book)
2.) the world must also possess special characteristics — raises the question that it does not attempt to describe "what must the world be like in order that man may prevail?"

L. Laudan Progress and its Problems
University of California Press, Berkeley. 1977.

dominant feature - theory model & science — no reference to truth
— yet no labels that hard cases may be modelled.
distinguishes empirical & conceptual problems
new theories must be judged on
1) how they clear up empirical problems
versus
2) how they generate conceptual problems

Laudan lists of research traditions
rather than paradigms or programmes
Good description of what is interesting (problem solving capability) and attack on
Popperian of knowledge in Part II.